Electromedical Notes and Abstracts

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THE USES OF GALVANISM *

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The uses of galvanic current may briefly be summed up under two headings -- that of producing motion in the muscular structures of the body, and that of chemical action. The chemical action is essentially one of ionization similar to the effects produced by an electric current in electrolysis. This electrolytic, or ionizing effects are a direct result of the two poles acting upon some substance which may be ionized. When the action takes place upon human tissues, it is called medical ionization. If the positive pole is applied to the skin surface, an acidity, sedation, and coagulatory effect is noted, while at the negative pole, it attracts alkaline ions, is irritating, and produces a certain amount of liquefaction. These actions occur on mucous membranes and skin also. So, it is possible to utilize the ionizing effect of each of these poles in the treatment of various diseases and conditions of the human body.

Since wet cell batteries and even dry cell batteries are unhandy to use today, especially in great numbers, two outstanding methods of producing galvanism are now in order. These are the direct current generator, and tube rectifier. The latter is more modern, and makes use of a rectifying tube similar to that used in a radio to change alternating house current into direct current. Such a current emanating from a rectifying tube is galvanic in nature.

Many fields of medicine make use of galvanism today by controlling the simple actions mentioned above by each of the galvanic poles. For instance, since the negative pole is known to have a liquefaction effect, it is employed for the treatment of early strictures, erosions of the cervix, hemorrhoids, ulcerations, and newly formed scar tissue. The negative pole is also widely employed in the removal of superfluous hair due to its caustic and liquefactive action. The positive pole, however, being the one which attracts acid elements, and is sedative to sensory nerve endings, decreasing muscular irritability, has been used for the treatment of painful conditions, such as neuralgias neuritis, and, when used with solutions of Mecholyl (Acetyl Beta Methocholine Chloride), has successfully been employed in the treatment of peripheral vascular diseases, such as Raynaud's, Arthritis, Arteriosclerosis, and certain forms of Berger's Disease. Positive galvanism has long been known to have value in the treatment of chronic otorrheas by employing a solution of zinc sulphate applied to the middle ear cavity with a zinc rod introduced through an insulated speculum. More recently the ionization of the mucous membranes of the nose with the positive pole has been gaining favor in the treatment of Hay Fever. In this case, a special solution or Jell of Zinc Sulphate is introduced into the nares with a piece of zinc as an electrode attached to the positive pole of a galvanic generator. The negative pole may be placed at any other part of the body, such as the arm or back of the neck. When the current is allowed to flow, ionization of the zinc salt in the nose produces a deposit of ionized zinc on the mucous membranes of the nose with a resultant reduction in the sensitivity of that membrane to allergic manifestations. Treatments are painless and surprisingly long-lasting.

Along the same lines, the obliteration of hemorrhoids by negative galvanism has met with much approval.

Copper ionization has most recently been revived in the treatment of cervicitis. Copper sulphate solutions may also supplant zinc solutions when employed as a treatment in hay fever. It is important that the copper or zinc sulphate solutions should not be strong -- usually one or two per cent.

When any galvanic current is used for ionization, several rules are essential. Strong solutions are NOT employed. Attachments and connections between the applicators and wires should be firm. The amount of the currents varies in each case. As a rule the amount of current which is comfortably tolerated by the patient is usually sufficient to cause the ionizing effect.

When using galvanism other than to cause ionization, namely, to produce motion, it must be remembered that muscle possesses the irritability and ability to respond to a make and a break in a galvanic current, but that there is essentially no response as far as motion goes to the steady flow of electrical energy. Thus, it becomes necessary to interrupt the current. In such cases, interruptors are employed. This may be accomplished by small coil magnets or cams if a direct current generator is used. Having produced interruption, and consequent motion, the question of either positive or negative pole is less important, because the interruption now is the motivator. Interrupted galvanism has been universally employed in the treatment of paralyses of various muscles with or without their proper nerve supply, since muscular tissue possesses the ability to respond to galvanic current of its own free will when the current is applied to the muscle itself. Since the use of interruptions in some sense cause pain, a sine wave current is less irritating, and is the ideal one to choose. The sine wave alternates in its positive and negative phases, and therefore eliminates concern over the production of the chemical actions referred to above.

Galvanism is one of the most important phases of physical therapy and promises to revolutionize a great many treatments of stubborn cases, since it is already showing much value in Hay Fever, Intumescent, Chronic and Hyperesthetic Rhinitis.

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